

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Application No. 10/811,144

Q74907

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A projection system comprising:

a light source;

a color separator which separates an incident beam according to color;

a scrolling unit, comprising at least one lens cell, which converts a rotation of the lens cell into the rectilinear motion of an area of the lens cell through which light passes so that an incident beam is scrolled;

a light valve which processes a beam transmitted by the color separator and the scrolling unit according to an image signal and which forms a color picture, the light valve comprising a plurality of micromirrors independently driven according to image signals to change a reflection angle of incident light; and

a projection lens unit which magnifies the color picture formed by the light valve and which projects the magnified color picture onto a screen;

wherein the micromirrors are diagonally driven according to the image signals; and

wherein the scrolling unit comprises

first and second spiral lens disks installed apart from each other, each including at least one spirally disposed cylindrical lens cell, and

a glass rod disposed between the first and second spiral lens disks.

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2. (original): The projection system of claim 1, further comprising a total internal reflection prism disposed in front of the light valve, which directs light passed through the color separator and the scrolling unit toward the light valve and which directs light reflected by the light valve toward the projection lens unit.

3. (original): The projection system of claim 2, wherein the total internal reflection prism comprises:

a first prism, having an incidence surface,
a second prism, attached to the first prism at an interface and having an emission surface,
and
a total reflection surface, formed on the interface between the first and second prisms, for totally reflecting incident light at a predetermined angle.

4. (previously presented): The projection system of claim 3, further comprising a reflection mirror disposed in front of the incidence surface of the first prism, which reflects light passed through the color separator and the scrolling unit toward the incidence surface of the first prism.

5. (currently amended): The projection system of claim 3, further comprising A
projection system comprising:

a light source:

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a color separator which separates an incident beam according to color;
a scrolling unit, comprising at least one lens cell, which converts a rotation of the lens cell into the rectilinear motion of an area of the lens cell through which light passes so that an incident beam is scrolled;
a light valve which processes a beam transmitted by the color separator and the scrolling unit according to an image signal and which forms a color picture, the light valve comprising a plurality of micromirrors independently driven according to image signals to change a reflection angle of incident light;
a projection lens unit which magnifies the color picture formed by the light valve and which projects the magnified color picture onto a screen;
a total internal reflection prism disposed in front of the light valve, which directs light passed through the color separator and the scrolling unit toward the light valve and which directs light reflected by the light valve toward the projection lens unit, the total internal reflection prism comprising:
a first prism, having an incidence surface,
a second prism, attached to the first prism at an interface and having an emission surface, and
a total reflection surface, formed on the interface between the first and second prisms, for totally reflecting incident light at a predetermined angle; and

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a reflection prism disposed in front of the incidence surface of the first prism, which reflects light passed through the color separator and the scrolling unit toward the incidence surface of the first prism;

wherein the micromirrors are diagonally driven according to the image signals.

6. (cancelled)

7. (currently amended): A projection system, comprising:

a light source;

a color separator which separates an incident beam according to color;

a scrolling unit, comprising at least one lens cell, which converts a rotation of the lens cell into the rectilinear motion of an area of the lens cell through which light passes so that an incident beam is scrolled;

a light valve which processes a beam transmitted by the color separator and the scrolling unit according to an image signal and which forms a color picture, the light valve comprising a plurality of micromirrors independently driven according to image signals to change a reflection angle of incident light; and

a projection lens unit which magnifies the color picture formed by the light valve and which projects the magnified color picture onto a screen;

wherein the micromirrors are perpendicularly driven according to the image signals; and
wherein the scrolling unit comprises:

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first and second spiral lens disks installed apart from each other, each including at least one spirally disposed cylindrical lens cell, and
a glass rod disposed between the first and second spiral lens disks.

8. (original): The projection system of claim 1, wherein the color separator comprises first, second, and third dichroic filters, which are disposed at different angles between the light source and the scrolling unit and each of which reflects a beam of a color and transmits beams of all other colors.

9. (original): The projection system of claim 1, wherein the color separator comprises first, second, and third dichroic prisms sequentially attached to one another between the light source and the scrolling unit,

wherein the first, second, and third dichroic prisms respectively include first, second, and third dichroic filters, each of which reflects a beam of a color and transmits beams of all other colors.

10. (original): The projection system of claim 1, wherein the color separator comprises first, second, and third dichroic filters, which are disposed in parallel between the light source and the scrolling unit and each of which reflects a beam of a color and transmits beams of all other colors.

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11. (original): The projection system of claim 10, further comprising a prism disposed in front of the color separator.

12-13. (cancelled).

14. (original): The projection system of claim 1, further comprising a spatial filter disposed between the light source and the scrolling unit, which controls a divergence angle of the light emitted from the light source.

15. (original): The projection system of claim 1, further comprising first and second cylindrical lenses respectively disposed in front of and behind the scrolling unit.

16. (original): The projection system of claim 1, further comprising first and second fly-eye lens arrays sequentially disposed on a light path between the scrolling unit and the light valve.

17. (currently amended): The projection system of claim 16, further comprising a relay lens disposed on a light path between the second fly-eye lens array and the light valve.